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## Environmental Policy

### 1. History and General Characteristics of Environmental Policy

#### 1.1 History

For as long as people have been altering their environment, they also have been polluting and depleting their natural resources. A striking historical illustration of the links between population growth, economic needs, and environmental change concerns the immense degradation of forests since the twelfth century in Europe to meet the timber supply for an increasing population. Only in the eighteenth century, in response to the devastating effects of the over-exploitation of forests, was the concept of sustainable development formulated, with a view to the future need for a regular supply of timber and the preservation of the other functions of the forest.

In the twentieth century, international environmental policy evolved over several periods, reflecting the state of the environment, changes in political consciousness of the environment, the development of scientific knowledge, the application of technologies, and the changing structure of the international legal order. From the 1930s through the 1960s, a science-based literature gradually evolved which laid the foundation for political action in the field of environmental protection. In 1962, Rachel Carson published *Silent Spring*, an attack on the indiscriminate use of pesticides and a call for a change in the way humankind viewed the natural world. The book attracted immediate attention and contributed to a heightened public awareness of an endangered environment. Carson's research focused on the indis-

criminate spraying of pesticides like DDT. As a result of her writing, DDT was banned as an insecticide in the USA and in most countries of the world. Today, the book is rightly considered a milestone in the history of environmentalism which has influenced modern thinking far beyond DDT. In 1970, a new awareness of the place of humankind in nature, of the sensitivity of nature, and of human responsibility, culminated in what may be considered the first systematic modern legislative and institutional response to the growing environmental challenge, being the National Environmental Policy Act (NEPA) by the US Congress and the establishment of the Environmental Protection Agency (EPA). Key initiatives of environmental policy date from the late 1960s and early 1970s when public demonstrations and riots were on the agenda in industrialized countries and when environmental pollution had become a major public health concern, initially because of the new phenomenon of acid rain in North Europe. These years of public unrest and distrust witnessed a slow erosion in 'business as usual,' and the rising call for 'the conservation of nature' soon led to the chaotic birth of the first green parties in Europe and, at the global level, led to the UN Conference on the Human Environment (so called Stockholm Conference) of 1972—the beginning of the active period of international environmental policy with new insights into the relationship between human society and the earth's natural capital. The Stockholm Conference set the scene for novel international activities at the global and regional level and also influenced legal and institutional development. In 1973, the United Nations Environmental Programme (UNEP) was created as the central environmental focal point in the United Nations, and other international organizations slowly followed suit and presented environmental protection concepts of their own, as did for example the Food and Agriculture Organization of the United States (FAO), World Health Organization (WHO), World Meteorological Organization (WMO), United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank.

#### 1.2 Characteristics of Modern Environmental Policy

Knowledge of the impact of humankind on the natural world has grown rapidly since the emergence of the term 'environment' in the early 1960s. The emission and impact of sources of pollution became more understood, and new sources of pollution were discovered slowly. Ecology as a science was now regarded seriously by most scientists and the public. During the 1970s, the volume and influence of ecological studies increased, and new technologies to investigate the environment were developed, such as radar to observe the earth's surface. In the 1980s, purely scientific matters began to acquire a political dimension. Regional and global environmental threats became part

of the international community agenda as scientific evidence identified the potential consequences of climate change, ozone depletion, and loss of biodiversity. Local issues, like the forest destruction in the tropics or desertification, were recognized to have transboundary or even global consequences for mankind.

While the substance of environmental policy formulation is largely dominated by science, political essence is often characterized by the delay between cause and effect.

Environmental issues, like the ongoing dramatic forests losses, the increasing emission of greenhouse gases, and the loss of biological diversity call for *long-term strategies* in the field of environmental policy. The dimension of time is relevant for both international and national environmental policy. The experiences of the last few decades of the twentieth century demonstrate that democratic governments are better equipped to deal with long-term issues than authoritarian or totalitarian regimes. But political democracies as well as market economies may themselves be guided by parameters and values that make only limited allowance for long-term aspects for the sake of short-term concern for voting results or shareholder value. In practice, party leaders need to determine exactly what balance should be struck between quick successes and effective long-term policies. Environmental consequences of economic or social policies do not necessarily affect those persons or generations who enjoy its immediate benefits, and the momentary intangibility has given rise to the call for intergenerational equity and sustainable development. Political action to address these concerns has, moreover, to deal with the fact that science is not always clear on cause and effect of environmental degradation.

Originally conceived by German forest managers in the eighteenth century, the notion of *sustainable development* was highlighted in the final report by the World Commission on Environment and Development ('Brundtland Report' 1987) as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' The concept of sustainable development evades precise definition; in essence, it highlights two primary policy concerns of environmental policy: the integrated consideration of environmental, economic, and social issues and the expectation that policymakers will strike a fair balance between the interests of present and future generations (intergenerational equity). Having made numerous appearances in international treaties and other instruments, sustainable development is today firmly accepted as the key concept of international environmental and development policy. A single operational-oriented definition of the concept is impossible in view of the diversity of social, economic, and cultural conditions prevailing in each individual state. On the inter-

national level, the key challenge of environmental policy today lies in the ongoing search for a workable and effective consensus on the meaning of sustainable development which reflects the realities of both industrialized and developing states.

## 2. Areas of Environmental Policy

In terms of their origin and their effect, environmental problems may be divided into local and regional, international, and global issues. Such distinctions neglect that all sources of pollution and degradation originate from one local point, but they are useful in considering and formulating appropriate policy responses on local, regional, and global levels.

The thematic issues and areas of environmental policy are diverse and faceted.

(a) Global climate change is one of the greatest environmental challenges. For the most part, the increase of the concentration of greenhouse gases in the troposphere and the artificial warming of the earth's atmosphere seems to be due to human activities, including particularly fossil fuel use, land use change, and agriculture. The overwhelming weight of scientific authority predicts an alarming increase in temperature of about 1.4 °C to 5.8 °C by 2100 relative to 1990 and a rise of the average sea level of between 9 cm and 88 cm by the year 2100. Such changes would entail grave consequences for economies, the environment, matters of health, and food production.

(b) The accelerating decline of many of the world's forests represents another great problem facing the global community. The increasing human needs of a growing population in the developing countries, agricultural expansion, overharvesting of industrial wood and fuelwood, unsustainable commercial logging, forest fires, air pollution, overgrazing, pests, and diseases cause the ongoing massive forest destruction today, mainly in the tropics.

(c) The extinction and ecosystem destruction goes along with a relatively unknown loss of biodiversity. It is recognized that between 50 percent and 90 percent of all species currently in existence dwell in tropical forests. The global loss of species and natural habitat is proceeding at an alarmingly fast rate, with unknown but potentially disastrous future consequences.

(d) Another major issue concerns soil degradation which has affected about one-third of the world's agricultural soils and which often leads to desertification. Deserts account for about 7 percent of the earth's total land surface; the livelihoods of over 1 billion people in more than 100 countries are jeopardized by desertification, as farming and grazing land becomes less productive.

(e) Local and regional problems of the pollution of air and water have in part been addressed with success in industrialized states in the past decades, but continue to grow in most parts of the developing

world, in particular in the still growing number of megacities.

(f) The main pressure on land use is caused by an expanding economy and the demand for food by a growing population. Global food demand is expected to increase by 50 percent by 2015 and by more than 110 percent by 2050, with further pressure on the remaining nondomesticated areas worldwide.

(g) High population growth, the ongoing industrialization, and improving standards of living contribute to a higher demand for fossil energy. In the developed countries, energy use per capita is already extremely high and continues to increase slowly, and the much smaller developing nations' share of commercial energy consumption is expected to increase to nearly 40 percent by 2010. Energy consumption in the transportation sector is also expected to grow in both the developed and the developing countries as higher incomes will lead to a rising number of private cars in use. Energy consumption leads both to local and global problems of air pollution.

(h) Not only the earth's land surface, but also the oceans are threatened by ecological damage. The main environmental concerns to international waters stem from water quality degradation and overexploitation of marine resources. Land-based human activities cause 70–80 percent of the marine pollution and constitute a serious problem especially in coastal zones which provide 90 percent of the world's fishing catch and where 75 percent of the world's population live.

(i) The disposal and transport of industrial and domestic hazardous waste is another main problem on the national and international environmental agenda; many industrial products and chemical wastes are either nondegradable or difficult to dispose of.

(j) The development of modern tourism is characterized by a notable diversification in the location of new tourism destinations, particularly in Asia, North Africa, Latin America, and the Caribbean, with the result not only of economic growth, but also of an increasing environmental degradation in these regions.

### *3. Instruments of Environmental Policy*

The aim of environmental policy interventions through different kinds of instruments is to correct failures or to control specific behavior in achieving society's environmental goals.

#### *3.1 Constitutional Provisions*

Constitutional provisions to protect the environment are an instrument of national environmental law, like Art. 20a of the Basic Law of the Federal Republic of Germany, introduced in 1994. Art. 20a provides that 'pursuant to its responsibility for this and future generations, the State shall protect the natural basis of human existence by legislation within the framework of the Constitution, and by the exercise of its executive

and judiciary powers.' This rule establishes the protection of the environment as one of the goals of the State, although it does not accord any rights directly to the citizen.

#### *3.2 Command-and-control Approaches*

Two major kinds of tools are available for environmental policy: on the one side the more reactive command-and-control approaches (CAC) and on the other side preventive market-based instruments that create economic incentives not only for industries but also for private persons to reduce harm to the environment. Governments have traditionally employed CAC regulations in the 1970s and 1980s. This approach was subsequently reconsidered when economic studies pointed out that CAC regulations are often cost-ineffective, inflexible, and of limited efficacy. In particular, the private sector lacks an incentive to invest in developing a new and better control technology or strategy when the government dictates flat CAC rules.

#### *3.3 Market-based Instruments*

Limited inefficiency of CAC-regulations and the need to stimulate polluter's self-interest in the search for environmentally useful innovations have resulted in the development of alternative instruments achieving a better integration of economic and environmental decision making on a political and/or legal basis. The so-called market-based policies allow private industry and markets to remain relatively free in choosing the most efficient means of achieving environmental goals, and market incentives provide for increased flexibility and cooperation between government and industry; nevertheless, market-based-instruments require at least government supervision. Various types of market-based policies exist today.

Emissions trading was introduced in 1968 in the USA, and the attitude and perception towards tradable allowances among policymakers have since evolved; this concept allows a polluter to benefit from the results of a more effective actor in the same branch by way of paying for his additional effort. The interest in emissions trading especially for controlling greenhouse gases has grown during the 1990s, greatly influenced by the successful establishing of a tradable permit system to control sulfur dioxide and ozone-depleting substances in the USA. A special trading system for greenhouse gases is now envisaged in Art. 17 of the Kyoto Protocol (1997) to the UN Convention on Climate Change. The basic idea of emissions trading is simple. Each participant is subject to an allowed level of emission, and he is allowed to exchange parts of his emission allowances with another entity. Economically, emitters with low abatement costs will reduce emissions and sell their excess allowance, whereas polluters with high abatement

costs will prefer to buy them. The allowable emission total can be reduced over successive time periods. The Kyoto Protocol allows for two other types of flexible market-based innovations, namely Joint Implementation among industrialized countries and projects in developing states governed by the so-called Clean Development Mechanism.

Another approach to promoting pollution prevention relies on *voluntary self-commitments* by industry, such as the voluntary self-commitment of European car manufacturers to achieve reductions in fuel consumption. Such voluntary programs are faster to implement than regulations and may produce faster reductions. The quantitative assessment of voluntary programs is still difficult partly due to the fact that these programs are still new.

Market incentives can also come from *positive subsidies* for environmental purposes, in forms of grants, soft loans, tax allowances, or special environmental taxes (so-called 'eco-taxes') levied on products that are harmful to the environment when they are used in the production process, consumed, or disposed of. At the same time, subsidies granted for other than environmental reasons often result in the degradation of the environment. Below-market financing costs for some electricity infrastructure, tax preferences for oil and mineral extraction, agricultural commodity price programs or tax preferences for private vehicle transport will in effect harm the environment if they support measures which encourage the emission of environmentally harmful pollutants, the generation of waste, and the excessive use of natural resources. In consequence a debate to reduce or to eliminate such subsidies has begun, so far without major effect on state practice. The financial consequence of environmental policies for the public budget rightly often dominate public debates about environmental reform, and the reduction of subsidies provides an important response to such budgetary concerns.

The *environmental impact assessment* may today be called a classical instrument. It provides for a systematic check procedure for relevant public or private projects, e.g., for the construction of power stations, airports, motorways, but also for some agricultural or infrastructural projects. Such assessments are intended to provide the governmental authorities and the private entrepreneurs with better environmental information about the consequences of a project in the planning stages.

### 3.4 Neoliberalism and Environmental Policy

The paradigm of economic neoliberalism raises hopes for more prosperity, but it also raises questions concerning the protection of the environment. The call for a lean state allows for and fosters a liberal economy which has dominated national and international debates in the 1990s and has been reinforced by the globalization of the economy. Inasmuch as free

markets by themselves do not price negative environmental effects, economic neoliberalism will have to be combined with governmental or intergovernmental structures equipped and authorized to gather sufficient information and to exercise sufficient authority to protect the environment as a public good. This holds true, in principle, for the national and for the international level.

## 4. Principles of International Environmental Relations

In addition to substantive legislation describing in concrete terms the rights and obligations of the subjects of national or international environmental law, the international implications of environmental issues are reflected in a large number of principles, rules, or purely political goals which are still under development.

### 4.1 Sovereignty Over Natural Resources

Environmental issues do not respect national boundaries. Thus, environmental issues pose new challenges for state sovereignty, which is traditionally defined as affirming the independence of states in deciding about their own affairs, including their choices to define policies on the natural environment within their territory. Therefore, sovereignty over natural resources implies the right of a state to protect, but also to pollute or even to destroy the environment on its own territory. However, this right ends where environmental degradation is no longer restricted to the national territory and activities within one state's jurisdiction adversely affects conditions in another state. The obligation to protect the rights of other states within their own territory is generally accepted as a maxim of international law and frequently quoted in international environmental protection conventions and declarations, for instance as principle 21 of the Stockholm Declaration.

With regard to contemporary environmental problems with no single identifiable source like ozone depletion, global warming, polluted waters, eroding soils, loss of forests, and biodiversity, states have to assume responsibility not only for the ecological well-being of their own territory, but also of the earth's ecosystem. Thus, sector-specific regimes are developed among states which recognize that it is in the national interest to address jointly issues of global and regional environmental management.

### 4.2 Common but Differentiated Responsibility

Without disregarding the fact that efficiency in environmental protection can be achieved only by joint effort and obligation, the principle of common but

differentiated responsibility reflects the fact that industrialized nations and developing countries differ both in their responsibilities and capabilities. Many problems now existing in the field of environmental protection have arisen solely as a consequence of industrial production of the developed countries. Because developing countries are at an earlier state in the development process, they now insist on pursuing their own economic and social development, which includes polluting the environment in a manner formerly practiced by those states which today count among the industrialized nations. Thus, integration of developing states into global environmental regimes remains one of the key issues in designing international environmental policies.

In view of a potential conflict between economic necessity and ecological responsibility, a number of provisions in international treaties concerning environmental issues take into account the special situation and particular requirements of developing countries; in concrete, the relevant rules typically address issues of technology transfer and funding. For the time being, the principle of common but differentiated responsibility is a purely political concept, reflecting practical conditions and options without being legally binding.

#### 4.3 Scientific Uncertainty and the Precautionary Principle

Decisions on international environmental issues have to be taken in the face of scientific uncertainty: new scientific information can either confirm the assessment of risks or determine a less serious risk than estimated. The precautionary principle requires that a nation shall take measures to prevent environmental degradation even while there is a lack of full scientific knowledge. While originating in the context of the marine environment, the precautionary principle is now being applied to nonmarine issues such as the ozone depletion and climate change. One of the first texts to mention the precautionary principle was the preamble to the Convention for the Protection of the Ozone Layer; in the Rio Declaration it is embodied in principle 15. Although the precautionary principle appears in a number of international declarations, its basis and scope remain controversial. The growing practical acceptance of the concept was reflected in the successful negotiation of the Biosafety Protocol to the Biodiversity Convention in 2000.

#### 4.4 Preventive Principle

The principle of preventive action states that it is much more effective to prevent pollution than to remedy its effects or to assign liability for environmental damage. Therefore, states are obligated to take measures

designed to protect the environment early enough to keep environmental harm from occurring. The preventive approach has been endorsed *inter alia* by the 1972 Stockholm Declaration, the 1982 World Charter for Nature, and in a large number of international treaties. Principle 11 of the 1992 Rio Declaration calls on states to enact 'effective environmental legislation.' Not only incorporated into specific environmental treaties, but also into treaties of more general application, such as the European Community Treaty (ECT), the preventive principle involves the obligation constantly to take into account environmental concerns in all area of governmental activity and control. Instruments like early-warning systems, risk assessments and stronger monitoring provisions reflect the anticipatory approach. Despite differences in national legal systems, it will be of elementary importance to ensure that these principles are implemented in every state in a manner sufficiently efficient to benefit the environment.

### 5. International Environmental Law

#### 5.1 Global Issues

International environmental issues have increasingly burdened national governments and the factual degradation of the environment poses serious problems for the maintenance of national sovereignty. International policies to respond to such degradation reflect this factual situation, and in the long run the deliberate acceptance of the restriction of national sovereignty by way of acceptance of international agreements may be more advantageous from the vantage point of national freedom than insistence on national legal sovereignty and the absence of binding agreements. This paradox of environmental policy, however, remains to be universally understood and accepted.

A period of international environmental law began with bilateral fisheries treaties in the nineteenth century to halt overexploitation; yet practical effects were narrowed by emphasis only on border-related environmental problems. Early attempts to develop international environmental rules focused on the conservation of rivers and seas and the conservation of wildlife; the first whaling convention was adopted in 1931. The second phase in the development of international environmental policy was marked by the creation of the UN and the specialized agencies in 1945. Subsequently, international organizations on the regional and global level slowly began to address environmental issues, and the new range of environmental concerns included a focus on the causes of pollution resulting from certain ultrahazardous activities. However, recognition of the relationship between economic development and environmental

protection hardly existed. Nevertheless, growing policy concern over environmental protection prompted not only new actions on the local and national level, but also led to international efforts. The first culminating point was the Stockholm Conference in 1972. The goal set by governments at this conference was to 'protect and enhance the quality of the human environment for present and future generations' (Principle 1 of the Stockholm Declaration on the Human Environment). In the mid-1980s, a renewed internationalization began to take place: the increasing interdependence among states called for new foundations for international environmental cooperation. New regional and global conventions concerning environmental issues were adopted, and the first treaty to protect the ozone layer was concluded in 1985.

The next fundamental breakthrough in the international negotiations of universal environmental issues was embodied and articulated by the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 (UNCED), attended by 176 states and several thousand nongovernmental organizations. UNCED was concerned with a new paradigm of environmental politics, namely the new search for the balance between environmental protection and economic development. The conference adopted two legally binding treaties, the Convention on Biological Diversity and the Framework Convention on Climate Change, and three nonbinding instruments, the Rio Declaration, the Principles on Forests, and the AGENDA 21. UNCED has reaffirmed the need to integrate the concept of sustainable development and its environmental dimensions into economic policies. The World Bank, in particular, has since insisted more than other international organizations on the need for a holistic response to economic social and environmental issues and has started to work on so-called comprehensive development frameworks with its client states. In principle, a consensus has also emerged on the importance of technology cooperation as a strategy of sustainable development; while developing states have called for the transfer of machinery and technical equipment, developed states prefer to discuss the transfer of knowledge of science and technology and support for the institutional capacity to address environmental issues.

In the follow-up to UNCED, various institutional innovations have been introduced, like the Commission of Sustainable Development (CSD) within the United Nations. Also, funds have been set up for the purpose of transferring financial resources and technology for special sectors, e.g. the Multilateral Ozone Fund. The Global Environment Facility (GEF), initiated in 1990, and substantially reformed in 1994, is responsible for the financing of projects in the field of global environmental protection, particularly for measures in four focal areas (protection of the ozone layer, climate, international waters, and biological

diversity). The GEF stands out today as an institutional recognition for the requirement of environmental cooperation between North and South, with a novel voting structure which prevents North or South dominating. While in the GEF industrialized states have recognized in a binding way that effective global environmental policy presupposes support of the developing states by the developed world, developing states in turn have accepted that efforts within their economies and societies are required in the effort to address the global issues. It is true that the funds for the GEF are currently limited, less than US\$1 billion per year.

In 1997, the nineteenth UN General Assembly Special Session (UNGASS) took place to review progress in the field of sustainable development as set out in the Rio Declaration and Agenda 21 ('Earth Summit + 5'). Five years after Rio, some positive results had been achieved, reflected in the increasing willingness of states to accept international treaties to protect the world's climate, the ozone layer, biodiversity, and to combat the spread of deserts and soil degradation. Influential segments of civil society have been formed to address the long list of issues on the environmental agenda. Nevertheless, significant environmental problems remain in all regions of the world, and *communiqués* formulated by professional speech-writers cannot do away with the fact that the state of the global environment continues to deteriorate. Generally speaking, international environmental policy making is today seriously hindered by the absence of an effective body with a voice and authority comparable to the influence of other international organizations such as the World Trade Organization (WTO) or the International Monetary Fund (IMF). This institutional deficiency will become more and more noticeable as national governments will remain inclined to focus on their national agendas and on short-term issues. Thus, institutional improvement will remain on the agenda on the international level as a prerequisite for more effective policy making.

## 5.2 Regional Issues

The environmental rules of regional organizations must be considered in the context of their overall legal and political structure. Thus, the environmental law and policy of the EC is highly influenced by the Treaty of Amsterdam, adopted on October 2, 1997, which has introduced important changes to the environmental provisions of the EC treaty (ECT). Sustainable development has now been formally introduced as one of the goals of the European community (Article 2, ECT). Furthermore, the principle of integration, requiring the integration of environmental policy demands into other areas of community policy, is now embodied in a single provision in the very first part of the ECT (Article 6, ECT).

As the USA, Mexico, and Canada moved to liberalize regional trade through negotiations of the North American Free Trade Agreement (NAFTA), environmental concern played a significant role in the discussions. Despite many environmental provisions in the Agreement, i.e., environmental, health, and safety standards as well as sanitary and phytosanitary measures, the provisions were seen by the US environmental community as inadequate in response to the environmental risks posed by the liberalized trade among the three nations. In consequence of this criticism, the parties have negotiated a Side Agreement, the North American Agreement on Environmental Cooperation (NAAEC), which went into force on January 1, 1994 together with NAFTA.

With an increasing importance of regional economic associations, it will be important to formulate environmental policies which are not in practice subordinated and evaded in the application of the rules on economic progress.

## 6. Prospects

In the developing world, about 2 billion people live on less than US\$2 per day, and it is estimated that only half of them have access to clean and safe water. Development experts point out that these numbers may grow rapidly in the coming decades, and it has been rightly said, from an environmental viewpoint, that poverty acts as the most 'toxic substance.'

At the same time, the developed world relies on patterns of production and consumption which are often wasteful and which are not sustainable in the long run if adopted by people in the developing states. In these facts lies the basic cause and primary challenge of growing environmental problems. Ultimately, environmental policies will succeed or fail to the extent that they effectively address the underlying causes of these facts. If formulated against the forces of the market and without incentives for more environmentally benign technologies, such policies would fail. Also, the support of such policies by strong sectors of civil society is necessary. In the end, however, governments and international organizations are needed to formulate, accept, and implement effective environmental policy.

*See also:* Climate Policy: International; Deforestation–Forestation; Development: Sustainable Agriculture; Ecotourism; Environmental and Resource Management; Environmental Planning; Environmentalism, Politics of; Environmentalism: Preservation and Conservation; Land Degradation; Population Policy: International; Precautionary Principle; Sustainable Development; Tourism, Geography of

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## Environmental Policy: Protection and Regulation

Environmental policy is a commonly used term that eludes a simple, all encompassing definition. Essentially it is concerned with how best to govern the relationship between humans and the natural environment for the benefit of both. This broad definition has the merit of successfully capturing the unbounded character of the environment as a field of policy, touching as it does upon virtually every aspect